

# On the morphophonology of Czech adjectives

Edoardo Cavarani    Guido Vanden Wyngaerd

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# Content warning

The following slides contain phonological material  
that may be harmful or traumatizing to some  
morphosyntactic audiences

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- ▶ Modularity: a purely phonological take on PF
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# Outline

Introduction

Patterns of palatalisation

The analysis

Conclusion

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# Introduction

- ▶ Many suffixes trigger palatalisation of elements to their left
- ▶ The suffixes differ in the types of palatalisation they trigger
- ▶ Scheer (2001) distinguishes two types of palatalisation:
  - ▶ ‘small’, e.g. /k/ → /tʃ/ (*voják* ‘soldier’ → *vojác-i* ‘soldiers’)
  - ▶ ‘big’, e.g. /k/ → /tʃ/ (*plak-at* ‘to cry’ → *pláč-u* ‘I cry’)

## Two types of palatalisation (Scheer 2001)

	small	LOC/DAT.F.SG -ě	big	PST.PASS.PTCPL -ěn
/k/	/ʦ/	<i>louka</i> – <i>louce</i> ‘meadow’	/tʃ/	<i>zatknout</i> – <i>zatčen</i> ‘arrested’
/h/	/z/	<i>knih</i> a– <i>knize</i> ‘book’	/z/	<i>táhnout</i> – <i>tažen</i> ‘pulled’
/g/	/z/	<i>liga</i> – <i>lize</i> ‘league’	?	( <i>Olga</i> – <i>Olžin</i> )
/x/	/ʃ/	<i>střecha</i> – <i>střeše</i> ‘roof’	/ʃ/	<i>nadchnout</i> – <i>nadšen</i> ‘excited’
/t/	/c/	<i>máta</i> – <i>mátě</i> ‘mint’	/ʦ/	<i>nutit</i> – <i>nucen</i> ‘forced’
/d/	/ʒ/	<i>vláda</i> – <i>vládě</i> ‘government’	/z/	<i>uklidit</i> – <i>uklizen</i> ‘cleaned up’
/ʦ/	/ʦ/	( <i>Bystrica</i> - <i>Bystrice</i> ‘Bystrica’)	/tʃ/	<i>péci</i> – <i>pečen</i> ‘baked’
/s/	/s/	<i>mísa</i> – <i>míse</i> ‘bowl’	/ʃ/	<i>hlásit</i> – <i>hlášen</i> ‘reported’
/z/	/z/	<i>koza</i> – <i>koze</i> ‘goat’	/z/	<i>ohrozit</i> – <i>ohrožen</i> ‘endangered’
/n/	/ɲ/	<i>vina</i> – <i>vině</i> ‘guilt’	/ɲ/	<i>ranit</i> – <i>raněn</i> ‘wounded’
/r/	/r̩/	<i>sestra</i> – <i>sestře</i> ‘sister’	/r̩/	( <i>Věra</i> – <i>Věřin</i> )
/p/	/pj/	<i>stoupa</i> – <i>stoup[j]ě</i> ‘rise’	/p/	<i>zatořit</i> – <i>zatořit</i> ‘flooded’
/b/	/bj/	<i>ryba</i> – <i>ryb[j]ě</i> ‘fish’	/b/	<i>rozzlobit</i> – <i>rozzloben</i> ‘angered’
/f/	/fj/	<i>karafa</i> – <i>karaf[j]ě</i> ‘decanter’	/f/	
/v/	/vj/	<i>hlava</i> – <i>hla[j]ě</i> ‘head’	/v/	<i>obarvit</i> – <i>obarven</i> ‘dyed’
/m/	/mj/	<i>zima</i> – <i>zim[j]ě</i> ‘winter’	/m/	<i>zlomit</i> – <i>zlomen</i> ‘broken’

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- ▶ To explain the peculiar behaviour of the labials
- ▶ Many thanks to Markéta Ziková and Anna Poříomská for help and discussions
  - ▶ Check out their work on palatalization in the nominal domain

## Bigger aims

- ▶ To make an inventory of all patterns
  - ▶ Beranová (2009): 27 different suffixes, only ones beginning with back vowels
- ▶ To explain them in representational terms, without resorting to strata and OT constraints
  - ▶ See also Ziková and Pořómská
- ▶ To compare this approach to alternatives
  - ▶ Boyd (1997): autosegmental feature geometrical approach
  - ▶ Ketner (2005): OT approach using floating features
  - ▶ Zdziebko (2015) (Polish): Element Theory and autosegments
- ▶ To apply the same methodology to other Slavic varieties
- ▶ To refine morphosyntactic analyses (e.g. Caha et al. 2019, Vanden Wyngaerd & Vyshnevská 2023)

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**Patterns of palatalisation**

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# Patterns of palatalisation

- ▶ small
- ▶ big
- ▶ CMPR -*ěj*-(*š*) (Caha et al. 2019)
- ▶ CAUS -*i* (Caha et al. 2023)



	base		small		big	
/k/	<i>divoký</i>	‘wild’	/ʦ/		/tʃ/	<i>divočejší</i>
/h/	<i>strohý</i>	‘austere’	/z/		/z/	<i>strožejší</i>
/g/	—		/z/		?	—
/x/	<i>plachý</i>	‘timid’	/ʃ/		/ʃ/	<i>plašejší</i>
/t/	<i>kulatý</i>	‘round’	/c/	<i>kulatější</i>	/ʦ/	
/d/	<i>hrdý</i>	‘proud’	/tʃ/	<i>hrdější</i>	/z/	
/ʦ/			/ʦ/	—	/tʃ/	
/s/	<i>lysý</i>	‘bald’	/s/	<i>lysejší</i>	/ʃ/	
/z/	<i>ryzí</i>	‘pure’	/z/	<i>ryzejší</i>	/z/	
/n/	<i>benigní</i>	‘benign’	/ɲ/	<i>benignější</i>	/ɲ/	
/r/	<i>bujarý</i>	‘merry’	/r̩/	<i>bujarejší</i>	/r̩/	
/p/	<i>hloupý</i>	‘stupid’	/pj/	<i>hloup[j]ější</i>	/p/	
/b/	<i>blbý</i>	‘stupid’	/bj/	<i>blb[j]ějš-í</i>	/b/	
/f/			/fj/	—	/f/	
/v/	<i>hravý</i>	‘playful’	/vj/	<i>hrav[j]ější</i>	/v/	
/m/	<i>lakomý</i>	‘stingy’	/mɲ/	<i>lakom[ɲ]ější</i>	/m/	

## CAUS -i

base			small	big
/k/	<i>trpký</i>	'bitter'	/ʦ/	/tʃ/ <i>ztrpčil</i>
/h/	<i>drahý</i>	'expensive'	/z/	/z/ <i>zdražil</i>
/g/	—		/z/	?
/x/	<i>tichý</i>	'silent'	/ʃ/	/ʃ/ <i>tižil</i>
/t/	<i>nejistý</i>	'unsure'	/c/ <i>znejstil</i>	/ʦ/
/d/	<i>hnědý</i>	'brown'	/tʃ/ <i>zahnědil</i>	/z/
/ʦ/			/ʦ/ —	/tʃ/
/s/	<i>hlasý</i>	'voice'	/s/ <i>hlásil</i>	/ʃ/
/z/	<i>mráz</i>	'frost'	/z/ <i>zmrazil</i>	/z/
/n/	<i>levný</i>	'cheap'	/ɲ/ <i>zlevnil</i>	/ɲ/
/r/	<i>moudrý</i>	'wise'	/r̩/ <i>zmoudřil</i>	/r̩/
/p/	<i>tupý</i>	'blunt'	/pj/	/p/ <i>tupil</i>
/b/	<i>chabý</i>	'weak'	/bj/	/b/ <i>ochabil</i>
/f/			/fj/	/f/
/v/	<i>ošklivý</i>	'ugly'	/vj/	/v/ <i>ošklivil</i>
/m/	<i>chromý</i>	'lame'	/mj/	/m/ <i>ochromil</i>

## Patterns of palatalisation

	small	CMPR -ěj	CAUS -i	big
/k/	/ts/	/tʃ/	/tʃ/	/tʃ/
/h/	/z/	/ʒ/	/ʒ/	/ʒ/
/g/	/z/	?	?	/ʒ/
/x/	/ʃ/	/ʃ/	/ʃ/	/ʃ/
/t/	/c/	/c/	/c/	/ts/
/d/	/ʧ/	/ʧ/	/ʧ/	/z/
/ts/	/ts/	?	?	/tʃ/
/s/	/s/	/s/	/s/	/ʃ/
/z/	/z/	/z/	/z/	/ʒ/
/n/	/ɲ/	/ɲ/	/ɲ/	/ɲ/
/r/	/r̄/	/r̄/	/r̄/	/r̄/
/p/	/pj/	/pj/	/p/	/p/
/b/	/bj/	/bj/	/b/	/b/
/f/	/fj/	/fj/	/f/	/f/
/v/	/vj/	/vj/	/v/	/v/
/m/	/mj/	/mj/	/m/	/m/

## Patterns of palatalisation

	small	CMPR -ěj	CAUS -i	big
/k/	/t͡s/	/t͡ʃ/	/t͡ʃ/	/t͡ʃ/
/h/	/z/	/ʒ/	/ʒ/	/ʒ/
/g/	/z/	?	?	/ʒ/
/x/	/ʃ/	/ʃ/	/ʃ/	/ʃ/
/t/	/c/	/c/	/c/	/t͡s/
/d/	/t͡ʃ/	/t͡ʃ/	/t͡ʃ/	/z/
/t͡s/	/t͡s/	?	?	/t͡ʃ/
/s/	/s/	/s/	/s/	/ʃ/
/z/	/z/	/z/	/z/	/ʒ/
/n/	/ɲ/	/ɲ/	/ɲ/	/ɲ/
/r/	/r̄/	/r̄/	/r̄/	/r̄/

## Patterns of palatalisation

	small		big
/k/	/tʰ/	/tʃ/	/tʃ/
/h/	/z/	/ʒ/	/ʒ/
/g/	/z/	?	/ʒ/
/x/	/ʃ/	/ʃ/	/ʃ/
/t/	/c/	/c/	/tʰ/
/d/	/tʃ/	/tʃ/	/z/
/tʰ/	/tʰ/	?	/tʃ/
/s/	/s/	/s/	/ʃ/
/z/	/z/	/z/	/ʒ/
/n/	/ɲ/	/ɲ/	/ɲ/
/r/	/r̄/	/r̄/	/r̄/

## Patterns of palatalisation

	small	medium	big
/k/	/tʰ/	/tʃ/	/tʃ/
/h/	/z/	/ʒ/	/ʒ/
/g/	/z/	?	/ʒ/
/x/	/ʃ/	/ʃ/	/ʃ/
/t/	/c/	/c/	/tʰ/
/d/	/tʃ/	/tʃ/	/z/
/tʰ/	/tʰ/	?	/tʃ/
/s/	/s/	/s/	/ʃ/
/z/	/z/	/z/	/ʒ/
/n/	/ɲ/	/ɲ/	/ɲ/
/r/	/r̄/	/r̄/	/r̄/

## Patterns of palatalisation

	small	medium	big
/k/	/tʰ/	/tʃ/	/tʃ/
/h/	/z/	/ʒ/	/ʒ/
/g/		?	/ʒ/
/x/	/ʃ/	/ʃ/	/ʃ/
/t/	/c/	/c/	/tʰ/
/d/	/ʎ/	/ʎ/	/z/
/tʰ/	/tʰ/	?	/tʃ/
/s/	/s/	/s/	/ʃ/
/z/	/z/	/z/	/ʒ/
/n/	/ɲ/	/ɲ/	/ɲ/
/r/	/r̄/	/r̄/	/r̄/

## Patterns of palatalisation

	small	medium	big
/k/	/tʰ/	/tʃ/	/tʃ/
/x/	/ʃ/	/ʃ/	/ʃ/
/t/	/c/	/c/	/tʰ/
/tʰ/	/tʰ/	?	/tʃ/
/s/	/s/	/s/	/ʃ/
/n/	/ɲ/	/ɲ/	/ɲ/
/r/	/r̄/	/r̄/	/r̄/



## Patterns of palatalisation

	small PAL <sub>1</sub>	medium PAL <sub>2</sub>	big PAL <sub>3</sub>
/k/	/t͡s/	/t͡ʃ/	/t͡ʃ/
/x/	/ʃ/	/ʃ/	/ʃ/
/t/	/c/	/c/	/t͡s/
/t͡s/	/t͡s/	?	/t͡ʃ/
/s/	/s/	/s/	/ʃ/
/n/	/ɲ/	/ɲ/	/ɲ/
/r/	/r̄/	/r̄/	/r̄/

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# Overview

- ▶ **Palatalizers** are floating structures associating with the root-final available C or V

		small adds <b>I</b>	medium adds <b>H.I</b>	big adds <b>H.I</b>			
/k/	?	/tʃ/	?.I	/tʃ/	?.H.I	/tʃ/	?.H.I
/x/	H	/ʃ/	H.I	/ʃ/	H.I	/ʃ/	H.I
/t/	?.A	/c/	?.A.I	/c/	?.H.A.I	/tʃ/	?.H.A.I
/tʃ/	?.I	/tʃ/	?.I	/tʃ/	?.H.I	?	
/s/	H.A	/s/	H.A.I	/s/	H.A.I	/ʃ/	H.A.I
/n/	L	/ɲ/	L.I	/ɲ/	L.H.I	/ɲ/	L.H.I
/r/	A	/r̄/	A.I	/r̄/	A.H.I	/r̄/	A.H.I

# Overview

- ▶ **Palatalizers** are floating structures associating with the root-final available C or V
- ▶ The surfacing of [j] is not related to the strength of the palatalizer, but to the CV profile of the suffix

		small adds <b>I</b>	CMPR - <i>ěj</i> adds <b>H.I</b>		CAUS - <i>i</i> adds <b>H.I</b>		big adds <b>H.I</b>		
/p/	?U	/pj/	?U- <b>I</b>	/pj/	?U- <b>H.I</b>	/p/	?U	/p/	?U
/f/	H.U	/fj/	H.U- <b>I</b>	/fj/	H.U- <b>H.I</b>	/f/	H.U	/f/	H.U
/m/	L.U	/mj/	L.U- <b>(L.)I</b>	/mj/	L.U- <b>(L.)H.I</b>	/m/	L.U	/m/	L.U

# Overview

- ▶ **Palatalizers** are floating structures associating with the root-final available C or V
- ▶ The surfacing of [j] is not related to the strength of the palatalizer, but to the CV profile of the suffix

		small adds <b>I</b>		CMPR <i>-ěj</i> adds <b>H.I</b>		CAUS <i>-i</i> adds <b>H.I</b>		big adds <b>H.I</b>	
/p/	?U	/pj/	?U- <b>I</b>	/pj/	?U- <b>H.I</b>	/p/	?U	/p/	?U
/f/	H.U	/fj/	H.U- <b>I</b>	/fj/	H.U- <b>H.I</b>	/f/	H.U	/f/	H.U
/m/	L.U	/mj/	L.U- <b>(L.)I</b>	/mj/	L.U- <b>(L.)H.I</b>	/m/	L.U	/m/	L.U

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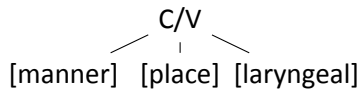
# Prerequisites

- ▶ Strict CV (Lowenstamm 1996, Scheer 2004)
- ▶ Element Theory (Backley 2011) ?2012



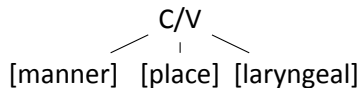
# Prerequisites

## a. General schema

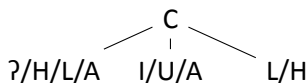


# Prerequisites

## a. General schema



## b. Consonants



## c. Vowels

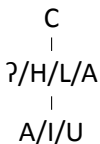


- ▶ [manner] and [place] can be complex → 2/3 elements
  - ▶ E.g. /tʃ/ = ʔ.H.I, and /e/ = A.I

# Prerequisites

- ▶ For ease of exposition
  - ▶ we verticalise the geometry
  - ▶ we ignore the [laryngeal] node

## a. Consonants



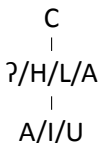
## b. Vowels



# Prerequisites

- ▶ For ease of exposition
  - ▶ we verticalise the geometry
  - ▶ we ignore the [laryngeal] node

## a. Consonants



## b. Vowels



- ▶ The **palatalizers** are floating structures: no C/V node
- ▶ They strive for association to an available C/V node
- ▶ Association starts from the leftmost available C/V node

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# Velars

		small adds <b>l</b>	medium adds <b>H.l</b>	big adds <b>H.l</b>
/k/	ʔ	/t͡s/ ʔ.l	/t͡ʃ/ ʔ.H.l	/t͡ʃ/ ʔ.H.l
/x/	H	/ʃ/ H.l	/ʃ/ H.l	/ʃ/ H.l

Small: /k/ → [t͡ʃ] = ʧ → ʧ.I

▶ /k/-final ROOT

... C V  
|  
ʧ

▶ -ě.LOC/DAT.F.SG

C V  
|  
e  
  
|

Small: /k/ → [t͡ʃ] = ? → ?.l

▶ /k/-final ROOT

... C V  
|  
?

▶ -ě.LOC/DAT.F.SG

C V  
|  
e  
  
l

▶ l associates to root-final C

... C V - C V  
| | |  
? e  
  
l



Small: /k/ → [t͡ʃ] = ? → ?.l

- ▶ /k/-final ROOT

... C V  
|  
?

- ▶ -ě.LOC/DAT.F.SG

C V  
|  
e

|

- ▶ | associates to root-final C

... C V - C V  
| | |  
? e  
|  
|

- ▶ ...k-ě → [t͡ʃ]

- ▶ Empty VC deletion  
(Gussmann & Kaye 1993)

... C V  
| |  
? e  
|  
|

Medium: /k/ → [tʃ] = ʔ → ʔ.H.I

▶ /k/-final ROOT

... C V  
|  
ʔ

▶ -ěj-.CMPR

C V C V  
| |  
H e j  
|  
|

Medium: /k/ → [tʃ] = ? → ?.H.I

▶ /k/-final ROOT

... C V  
|  
?

▶ H.I associates to root-final C

... C V - C V C V  
| | |  
? H e j  
|  
I

▶ -ěj-.CMPR

C V C V  
| |  
H e j  
|  
I

Medium: /k/ → [tʃ] = ʔ → ʔ.H.I

▶ /k/-final ROOT

... C V  
|  
ʔ

▶ -ěj-.CMPR

C V C V  
| | |  
H e j  
|  
|

▶ H.I associates to root-final C

... C V - C V C V  
| | | | |  
ʔ H e j  
|  
|

▶ ...k-ěj → [tʃej]

... C V C V  
| | | |  
ʔ.H e j  
|  
|

Big: /k/ → [tʃ] = ? → ?.H.↓

▶ /k/-final ROOT

... C V  
|  
?

▶ -ěn-.P.PRT

H e n  
|  
↓

# Big: /k/ → [tʃ] = ? → ?.H.I

- ▶ /k/-final ROOT

... C V  
|  
?

- ▶ -*ěn*-.P.PRT

H e C V  
| |  
n  
|  
I

- ▶ **H.I** associates to root-final C
- ▶ e associates to root-final V

... C V - C V  
| | |  
? H e n  
|  
I

# Big: /k/ → [tʃ] = ʔ → ʔ.H.ɿ

- ▶ /k/-final ROOT

... C V  
|  
ʔ

- ▶ -*ěn*-.P.PRT

H e C V  
| |  
ɿ n

- ▶ H.ɿ associates to root-final C
- ▶ e associates to root-final V

... C V - C V  
| | |  
ʔ H e n  
|  
ɿ

- ▶ ...*k-ěn* → [tʃɛn]

... C V C V  
| | |  
ʔ.H e n  
|  
ɿ

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# Coronals

		small adds <b>I</b>		medium adds <b>H.I</b>		big adds <b>H.<u>I</u></b>	
/t/	ʔ.A	/c/	ʔ.A. <b>I</b>	/c/	ʔ. <b>H</b> .A. <b>I</b>	/ʈ/	ʔ. <b>H</b> .A. <b><u>I</u></b>
/ʈ/	ʔ.I	/ʈ/	ʔ. <b>I</b>	/ʈ/	ʔ. <b>H</b> . <b>I</b>	ʔ	
/s/	H.A	/s/	H.A. <b>I</b>	/s/	<b>H</b> .A. <b>I</b>	/ʃ/	<b>H</b> .A. <b><u>I</u></b>
/n/	L	/ɲ/	L. <b>I</b>	/ɲ/	L. <b>H</b> . <b>I</b>	/ɲ/	L. <b>H</b> . <b><u>I</u></b>
/r/	A	/r̥/	A. <b>I</b>	/r̥/	A. <b>H</b> . <b>I</b>	/r̥/	A. <b>H</b> . <b><u>I</u></b>

# Coronals

		small adds <b>I</b>		medium adds <b>H.I</b>		big adds <b>H.I</b>	
/t/	ʔ.A	/c/	ʔ.A. <b>I</b>	/c/	ʔ. <b>H.A.I</b>	/t͡s/	ʔ. <b>H.A.I</b>
/t͡s/	ʔ.I	/t͡s/	ʔ. <b>I</b>	/t͡s/	ʔ. <b>H.I</b>	?	
/s/	H.A	/s/	H.A. <b>I</b>	/s/	<b>H.A.I</b>	/ʃ/	<b>H.A.I</b>
/n/	L	/ɲ/	L. <b>I</b>	/ɲ/	L. <b>H.I</b>	/ɲ/	L. <b>H.I</b>
/r/	A	/r̥/	A. <b>I</b>	/r̥/	A. <b>H.I</b>	/r̥/	A. <b>H.I</b>

- ▶ Some similar-sounding segments have different URs

# Coronals

		small adds <b>I</b>		medium adds <b>H.I</b>		big adds <b>H.I</b>	
/t/	ʔ.A	/c/	ʔ.A. <b>I</b>	/c/	ʔ. <b>H</b> .A. <b>I</b>	/ʈ/	ʔ. <b>H</b> .A. <b>I</b>
/ʈ/	ʔ.I	/ʈ/	ʔ. <b>I</b>	/ʈ/	ʔ. <b>H</b> . <b>I</b>	ʔ	
/s/	H.A	/s/	H.A. <b>I</b>	/s/	<b>H</b> .A. <b>I</b>	/ʃ/	<b>H</b> .A. <b>I</b>
/n/	L	/ɲ/	L. <b>I</b>	/ɲ/	L. <b>H</b> . <b>I</b>	/ɲ/	L. <b>H</b> . <b>I</b>
/r/	A	/ɽ/	A. <b>I</b>	/ɽ/	A. <b>H</b> . <b>I</b>	/ɽ/	A. <b>H</b> . <b>I</b>

- ▶ Some similar-sounding segments have different URs
- ▶ No single UR has different phonetic interpretations

# Coronals

		small adds <b>I</b>		medium adds <b>H.I</b>		big adds <b>H.I</b>	
/t/	ʔ.A	/c/	ʔ.A.I	/c/	ʔ.H.A.I	/ʈ/	ʔ.H.A.I
/ʈ/	ʔ.I	/ʈ/	ʔ.I	/ʈ/	ʔ.H.I	ʔ	
/s/	H.A	/s/	H.A.I	/s/	H.A.I	/ʃ/	H.A.I
/n/	L	/ɲ/	L.I	/ɲ/	L.H.I	/ɲ/	L.H.I
/r/	A	/ɽ/	A.I	/ɽ/	A.H.I	/ɽ/	A.H.I

- ▶ Some similar-sounding segments have different URs
- ▶ No single UR has different phonetic interpretations
  - ▶ H.A.I (/s/) ≠ A.H.I (/ɽ/)

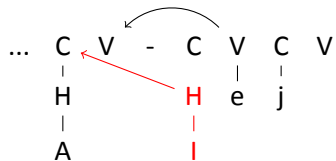
# Coronals

		small adds <b>I</b>		medium adds <b>H.I</b>		big adds <b>H.I</b>	
/t/	ʔ.A	/c/	ʔ.A.I	/c/	ʔ.H.A.I	/ʈ/	ʔ.H.A.I
/ʈ/	ʔ.I	/ʈ/	ʔ.I	/ʈ/	ʔ.H.I	ʔ	
/s/	H.A	/s/	H.A.I	/s/	H.A.I	/ʃ/	H.A.I
/n/	L	/ɲ/	L.I	/ɲ/	L.H.I	/ɲ/	L.H.I
/r/	A	/ɽ/	A.I	/ɽ/	A.H.I	/ɽ/	A.H.I

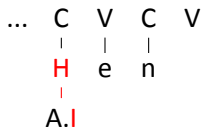
- ▶ Some similar-sounding segments have different URs
- ▶ No single UR has different phonetic interpretations
  - ▶ H.A.I (/s/) ≠ A.H.I (/ɽ/)
  - ▶ H.A.I (/ʃ/) ≠ A.H.I (/ɽ/)

H.A.I (/s/)  $\neq$  A.H.I (/r/)

► ...s-ěj-.CMPR

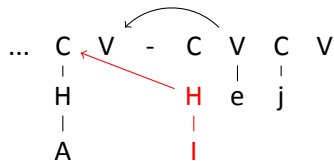


► Output: [sej]

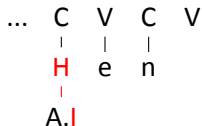


# H.A.I (/s/) $\neq$ A.H.I (/r/)

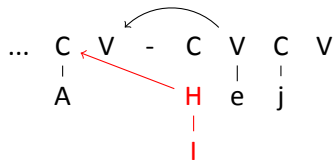
## ► ...s-ěj-.CMPR



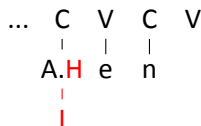
## ► Output: [sej]



## ► ...r-ěj-.CMPR

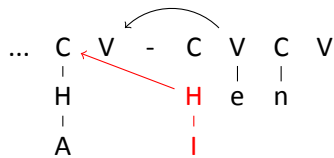


## ► Output: [rej]

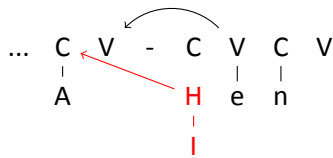


# H.A.I (/ʃ/) ≠ A.H.I (/r/)

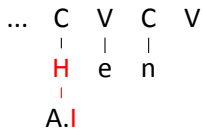
► ...s-ěn-.P.PRT



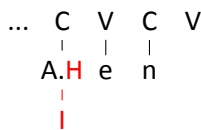
► ...r-ěn-.P.PRT



► Output: [ʃen]



► Output: [ɾej]





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# Labials

	small	CMPR -ěj	CAUS -i	big
/p/	/pj/	/pj/	/p/	/p/
/b/	/bj/	/bj/	/b/	/b/
/f/	/fj/	/fj/	/f/	/f/
/v/	/vj/	/vj/	/v/	/v/
/m/	/mj/	/mj/	/m/	/m/

# Labials

		small adds <b>l</b>	CMPR -ěj adds <b>H.l</b>		CAUS -i adds <b>H.l</b>		big adds <b>H.l</b>		
/p/	ʔ.U	/pj/	ʔ.U- <b>l</b>	/pj/	ʔ.U- <b>H.l</b>	/p/	ʔ.U	/p/	ʔ.U
/f/	H.U	/fj/	H.U- <b>l</b>	/fj/	H.U- <b>H.l</b>	/f/	H.U	/f/	H.U
/m/	L.U	/mj/	L.U- <b>(L.)l</b>	/mj/	L.U- <b>(L.)H.l</b>	/m/	L.U	/m/	L.U

## Labials

- ▶ Palatalisers can fail to have an effect because they can end up being unassociated to a C slot
- ▶ The surfacing of [j] is not related to the strength of the palatalizer, but to the CV profile of the suffix

# Labials

- ▶ Labials have an U element
- ▶ U and I are on the same tier
- ▶ Floating I cannot associate to a node containing U
- ▶ I has two choices:
  - ▶ it can associate with the final V of the root, if available, and surface as [j]/[i]
  - ▶ if no such V is available, I remains unassociated, and therefore unpronounced (or it merges with other elements in V)

Labials: /p/ → /pj/

▶ -ěj-.CMPR

C	V	C	V
H	e	j	
I			

# Labials: /p/ → /pj/

## ▶ -ěj-.CMPR

C	V	C	V
H	e	j	

- ▶ | tries to associate to the leftmost available slot, but
- ▶ U prevents | associating to the stem-final C

*... C	V	-	C	V	C	V
?			H	e	j	
U						

*(A red arrow points from the H in the stem-final C to the V in the stem-initial V, with a double slash // indicating a failed association.)*

- ▶ | associates to the second left-most slot, i.e. the stem-final V
- ▶ ...p-ě → [pje]

*... C	V	-	C	V	C	V
?			H	e	j	
U						

*(A red arrow points from the H in the stem-final V to the V in the stem-initial V, indicating a successful association.)*


## Labials: /p/ → /p/

- ▶ -i.CAUS

H  
|  
I |

- ▶ U prevents H.I associating to root-final C
- ▶ H.I associates root-final V
- ▶ *i* joins H.I (*i* = l) ⇒ ...*p*-*ji* → [pi]

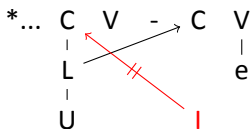
... C V  
| |  
? H  
| |  
U I |



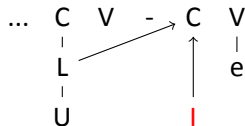


## Labials: /m/ → [mɲ]

- ▶ (H.)l tries to associate to the leftmost available slot, but
- ▶ U prevents l associating to the stem-final C
- ▶ L association with the suffix's C prevents l associating to V



- ▶ l associates to the second leftmost slot, i.e. the suffix-initial C
- ▶ ...m-ě → [mɲe]



# Labials

- ▶ Some (small) palatalizing e pattern with long vowels (Ziková & Pořómská pc)
  - ▶ nes-l ~ nés-t ... ⇒ P.PRT CVC-l ~ INF CVVC-t
  - ▶ spě-l ~ spě-t ... ⇒ P.PRT ČěC-l ~ INF ČěC-t ⇒ ě = VV

# Labials

- ▶ Some (small) palatalizing *e* pattern with long vowels (Ziková & Poříomská pc)
  - ▶ nes-l ~ nés-t ... ⇒ P.PRT CVC-l ~ INF CVVC-t
  - ▶ spě-l ~ spě-t ... ⇒ P.PRT ČěC-l ~ INF ČěC-t ⇒ ě = VV
- ▶ These *e* can govern a preceding alternation site (Ziková & Poříomská pc)
  - ▶ N.SG barv-a, G.PL barev, LOC.SG barv-ě [rvje]

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	small	medium	big
/k/	/t͡s/	/t͡ʃ/	/t͡ʃ/
/x/	/ʃ/	/ʃ/	/ʃ/
/t/	/c/	/c/	/t͡s/
/t͡s/	/t͡s/	?	/t͡ʃ/
/s/	/s/	/s/	/ʃ/
/n/	/ɲ/	/ɲ/	/ɲ/
/r/	/r̄/	/r̄/	/r̄/

	small	medium	big
?	?. <u>I</u>	?. <u>H.I</u>	?. <u>H.I</u>
H	H. <u>I</u>	H. <u>I</u>	H. <u>I</u>
?A	?A. <u>I</u>	?H.A. <u>I</u>	?H.A. <u>I</u>
?I	?. <u>I</u>	?H. <u>I</u>	?
HA	H.A. <u>I</u>	H.A. <u>I</u>	H.A. <u>I</u>
L	L. <u>I</u>	L.H. <u>I</u>	L.H. <u>I</u>
A	A. <u>I</u>	A.H. <u>I</u>	A.H. <u>I</u>

- ▶ Abstract segmental representations
  - ▶ Similar-sounding segments with different representations
- ▶ Substance-free phonology
  - ▶ Focus on phonological behaviour rather than on phonetics
- ▶ Strict modularity
  - ▶ Phonology and phonetics as two different modules

# References

- Backley, P. (2011), *An Introduction to Element Theory*, Edinburgh University Press, Edinburgh.
- Beranová, A. (2009), Palatalizující sufixy v současné češtině: palatalizace v kontextu nepředních vokálů, Master's thesis, Masaryk University, Brno.
- Boyd, M. (1997), Palatalization and Coronalization in Russian and Czech: A non-linear Approach, PhD thesis, Ohio State University, Columbus, OH.
- Caha, P., De Clercq, K. & Vanden Wyngaerd, G. (2019), 'The fine structure of the comparative', *Studia Linguistica* **73**(3), 470–521.
- Caha, P., De Clercq, K. & Vanden Wyngaerd, G. (2023), 'Zero-morphology and change-of-state verbs', *Zeitschrift für Sprachwissenschaft* **42**(1), 35–62.
- Gussmann, E. & Kaye, J. (1993), 'Polish notes from a Dubrovnik cafe', *SOAS Working Papers in Linguistics and Phonetics* **3**, 427–462.
- Ketner, K. (2005), 'Palatalization and featural morphemes in Czech', *Cambridge Occasional Papers in Linguistics* **2**, 129–147.
- Lowenstamm, J. (1996), CV as the only syllable type, in J. Durand & B. Laks, eds, 'Current trends in phonology. Models and methods', *European Studies Research Institute, University of Salford, Manchester*, pp. 419–441.
- Scheer, T. (2001), *Čeština ve Varšavě*. Handout of a course at Instytut Anglistyki Uniwersytetu Warszawski.
- Scheer, T. (2004), *What is CVCV and why should it be?*, Vol. 1 of *A Lateral Theory of Phonology*, De Gruyter Mouton, Berlin.
- Vanden Wyngaerd, G. & Vyshnevskaya, A. (2023), Making sense of comparative allomorphy in Slavic. *SinFonIJA* 16, Brno.
- Zdziebko, S. (2015), 'A generalized nonlinear affixation approach to Polish palatalizations', *Studies in Polish Linguistics* **10**(1), 17–55.



# Outline

Comparative -š: assimilation

Adjectivising -í (God and animals)

Overview of patterns

## Comparative -š: assimilation

base			zero	small	big
/k/	<i>leh</i> ký	'light'	/k/	/ʦ/	/tʃ/ <i>lehč(š)í</i>
/h/	<i>dra</i> hý	'expensive'	/h/	/z/	/z/ <i>dražší</i>
/g/	—		/g/	/z/	?
/x/	<i>tich</i> ý	'silent'	/x/	/ʃ/	/ʃ/ <i>tišší</i>
/t/	<i>boh</i> atý	'rich'	/t/	/c/	/ʦ/
/d/	<i>tvrd</i> ý	'hard'	/d/	/tʃ/	/z/
/ʦ/			/ʦ/	/ʦ/	/tʃ/
/s/	<i>vyso</i> ký	'high'	/s/	/s/	/ʃ/ <i>vyšší</i>
/z/	<i>nízk</i> ý	'low'	/z/	/z/	/z/ <i>nižší</i>
/n/			/n/	/ɲ/	/ɲ/
/r/	<i>star</i> ý	'old'	/r/	/r̥/	/r̥/
/p/	( <i>dobr</i> ý)	'good'	/p/	/pj/	/p/
/b/	<i>slab</i> ý	'weak'	/b/	/bj/	/b/
/f/			/f/	/fj/	/f/
/v/	<i>tmav</i> ý	'dark'	/v/	/vj/	/v/
/m/			/m/	/mɲ/	/m/

## Comparative -š: assimilation

- ▶ drahý-dražší, tichý-tiší, but also vysoký-vyšší, blízký-blíží, úzký-uží, nízký-níží, krásný-kraší
- ▶ /ʃ/ palatalizes both velar and coronal consonants, as long as they are fricative, but labials are still out
  - ▶ U repels !
  - ▶ Strong typological evidence for the resistance of labials to palatalize
- ▶ OCP effect

# Comparative -š: assimilation

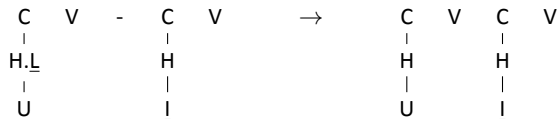
- ▶ Velar - /x-ʃ/ → [ʃ]



- ▶ Coronal - /s-ʃ/ → [ʃ] (I+L=I)



- ▶ Labial - /v-ʃ/ → [ʃ] (U ↔ I; /v/-devoicing → L-removal)



## Comparative -š: assimilation

- ▶ **PAL<sub>3</sub>** as fricative assimilation
  - ▶ OCP effect
  - ▶ Labials out because labial's U repels l
- ▶ Where does the difference between feature integration and assimilation come from?
- ▶ What drives the application of the two different processes?
- ▶ Tentative answer
  - ▶ **PAL<sub>1</sub>** l is 'manner-less' → it links to whatever 'manner' feature it finds, or to an empty C if repelled by U
  - ▶ **PAL<sub>3</sub>** l is bound to its 'manner' feature, and it follows its fate, unless repelled by U

# Outline

Comparative -š: assimilation

Adjectivising -í (God and animals)

Overview of patterns

## Adjectivising -í (God and animals)

base			small		big	
/k/	<i>pták</i>	'bird'	/tʃ/		/tʃ/	<i>ptačí</i>
/h/	<i>Bůh</i>	'God'	/z/		/z/	<i>Boží</i>
/g/			/z/		?	—
/x/	<i>moucha</i>	'fly'	/ʃ/		/ʃ/	<i>muší</i>
/t/	<i>mamut</i>	'mammoth'	/c/	<i>mamutí</i>	/tʃ/	
/d/	<i>had</i>	'snake'	/ʃ/	<i>hadí</i>	/z/	
/tʃ/	<i>ovce</i>	'sheep'	/tʃ/		/tʃ/	<i>ovčí</i>
/s/	<i>husa</i>	'goose'	/s/	<i>husí</i>	/ʃ/	
/z/	<i>koza</i>	'goat'	/z/	<i>kozí</i>	/z/	
/n/	<i>havran</i>	'raven'	/ɲ/	<i>havraní</i>	/ɲ/	
/r/	<i>vydra</i>	'otter'	/r/	<i>vydrí</i>	/r/	
/p/	<i>sup</i>	'vulture'	/pj/		/p/	<i>supí</i>
/b/	<i>ryba</i>	'fish'	/bj/		/b/	<i>rybí</i>
/f/			/fj/		/f/	—
/v/	<i>lev</i>	'lion'	/vj/		/v/	<i>lví</i>
/m/			/mj/		/m/	—

# Outline

Comparative -š: assimilation

Adjectivising -í (God and animals)

Overview of patterns



# Overview of patterns

- ▶ Small
  - ▶ Nouns
    - ▶ case marker NOM.PL.M *-i*
    - ▶ case marker LOC/DAT.F.SG *-ě*
  - ▶ Adjectives
    - ▶ soft agreement marker *-í* (ROOT-*í*-{ $\emptyset$ /-ho/-mu/-m/-ch/-mi}))
- ▶ Medium
  - ▶ Adjectives
    - ▶ denominal *-í* (animals and God)
    - ▶ comparative *-ěj*
  - ▶ Verbs
    - ▶ causative *-i*
- ▶ Big
  - ▶ Verbs
    - ▶ past passive participle *-ěn*